

## Comments on DISB Draft Stressors Document

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Overall, I believe the document and attachment succeed in characterizing a process to prioritize stressors and to develop a strategy for managing them in the Delta. I make a few comments, provided below. Additionally, I suggested Track Changes edits and made some margin comments on the document itself.

My comments refer to the draft document sections indicated.

*1. There is no broadly agreed upon methodology for classifying and prioritizing multiple stressors.*

Seems OK. A few edits suggested in Track Changes.

*2. Stressors are determined in relation to management objectives.*

This section gave me difficulty. Do stressors really “act on objectives?” New stressors or effects of stressors could modify the objectives. Is that what we mean?

“the Objective that is stressed” and “stressors typically affect an objective” Again, I have trouble with this description. Can an objective be “stressed?” Don’t we mean that the ecosystem, or some component/process in the system, is stressed making it difficult to achieve an objective. The nature of a stress or its evolving effects could lead to alteration of an objective, a part of the adaptive management process. I do agree that objectives can be ranked or prioritized.

Point #6. What do we mean by “is meaningless?”

*3. The terminology used by different agencies and investigators in describing and classifying stressors is not standardized.*

Line 8. “the variables that directly affect objectives” This needs clarification. In DPSIR, which we have adopted and modified to our needs, Drivers are linked to Pressures (= Stressors) which Impact the State of System Attributes, whose metrics are used to judge if Objectives are being met. If Objectives are not being met, management Responses are modified or adapted to help meet the Objectives or, alternatively, Objectives could be modified.

*4. Different kinds of stressors demand different kinds of responses.*

Point #1. “Globally determined stressors—stressors, like the effects of climate change or population growth, which cannot be eliminated or mitigated within the purview of the Delta Plan. Management actions must adapt to the continued effects of these stressors in the Delta.”

Here, I think we are equating what I consider to be a “Driver,” as a stressor. It seems to me that actions, other than adaptation, can be taken to reduce pressures (stress) exerted by some “Globally Determined Stressors.” Language once again is critical. Management may not be able to mitigate and interrupt or stop the evolution of the driving force, but can take actions to alleviate the stress, at least in the short and intermediate term. Engineering, fisheries management, any number of specific actions could relieve stress.

Last Paragraph of 4. Final two sentences.

This is a good point (i.e., ‘trade-offs’ will be necessary). In fisheries-multispecies and fisheries-ecosystem models, such outcomes always are seen. Fishing strategies can optimize yields of a trophic level, or maximize overall yields in an ecosystem, but not all species can be managed for optimality. Tradeoffs are necessary. In the Delta, it is likely that some taxa will suffer as a consequence of removing stressors that impact threatened species.

*5. Pay attention to the big, long-term stressors.*

Seems good to me.

*6. Policies to deal with multiple stressors have highly uncertain consequences.*

I think this section is very effective in illustrating the uncertainties of mitigation and pathways to recovery. Are there examples from the Delta itself of non-linear trajectories in recovery of resources, or are virtually all components of the Delta system still on the downward, more or less linear and negative trajectory?

*7. Support Delta science.*

This section seems OK. I guess there is some risk that endorsing the DRERIP approach and conceptual models will set this approach in motion without careful consideration of alternatives. Is this a concern?

*8. Expect surprises.*

I think this is good closing advice. I thought the word “serendipitous” refers to an unexpected but favorable outcome. Here, we use it to describe potential unfavorable outcomes. ??

### Attachment Table

I inserted a few comments or additional notes in the Table itself.